## COAMS, JANE Deptember 6, 1860–May 21, 1935) Hotel Prize for Peace, 1931 Hotel with Nicholas Murray Butler)

Laura Jane Addams, pioneer American soreformer, peace activist, and founder of House, was born in Cedarville, Illinois, Addams, a prosperous banker, Repubter Addams, a prosperous banker, Repubter state senator, and ardent abolitionist, and former Sarah Weber—were of English and forman descent. When Addams was two years ber mother died. A somewhat withdrawn of shy child, she became deeply attached to broad-minded Quaker father, who retained her principal role model throughout the life.

In 1877 Addams entered the Rockford Femile Seminary, an institution that trained seminary, an institution that trained deficitorian of her class of seventeen in 1881 of received her B.A. when Rockford became degree-granting institution a year later. Crossing not to pursue missionary work, Adthe entered the Women's Medical College Philadelphia in the fall of 1881, but poor teach forced her to withdraw after only a few ports. The death of her father that same year tegered a depression that lasted eight years, period marked by illness, unhappiness, and poertainty about her future.

In 1883 Addams and a friend, Ellen Gates Starr, toured Europe. They visited Toynbee Hall, a settlement house in London's destitute East End, run by a group of Oxford University Indents. Moved by this work, Addams and Starr returned to the United States determined find a house in the slums where they "might team of life from life itself." Their search led Ochicago's Nineteenth Ward, a poor district Populated by a variety of immigrant groups. In September 1889 the two women moved into the decaying Charles Hull mansion and began an experiment in settlement work that was to attract some of the ablest reformers of the Progressive Era.

Within a few years, Hull House was serving a wide range of community needs. It included a day nursery, bookbindery, library, gymnasum, community kitchen, art studio, labor museum, and cooperative boarding house for young working women. There were dozens of clubs—an art group, a music school, even a troupe of actors. Newcomers could study English or take classes in cooking, sewing, or literature. Thousands of slum-dwellers, from James Petrillo to Benny Goodman, crossed its



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threshold. With financial assistance from wealthy Chicago philanthropists, Hull House grew to include thirteen buildings devoted to the educational, social, and recreational needs of the working class.

Nevertheless, Addams's political efforts to improve social conditions in the neighborhood sometimes alienated contributors and cost Hull House financial support. The institution lobbied successfully for passage of Illinois's first factory inspection act in 1893, and two years later it published Hull-House. Maps and Papers, a path-breaking sociological survey of sweatshops, tenement housing, and other harsh conditions in the Nineteenth Ward. That summer, after residents complained about inadequate trash collection, Addams got herself appointed garbage inspector for the ward and rose each morning at dawn to make sure the job was done. Pressure from Hull House helped establish the nation's first juvenile court in 1889. Moreover, Addams used her influence to support child labor laws, legislation protecting female factory workers, compulsory school attendance, and industrial safety regulations. Assisted by educated women like herself, she became practiced in lobbying, collecting evidence, marshaling statistics, and mobilizing public support.

Believing that the "moral energy of women" should be expressed through the vote, Addams participated in the Chicago suffrage campaign of 1907, served as vice president of the National American Woman Suffrage Association from 1911 to 1914, and attended the International Woman Suffrage Alliance in Bu-

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dapest. Her rationale for suffrage stemmed from her belief that women by nature possessed special civilizing qualities that were needed in the civic realm. If women were given the vote, Addams felt, they would be able to attack social problems more effectively. At the 1912 Progressive party convention, she seconded the nomination of THEODORE ROOSE-VELT and campaigned actively for his election.

The outbreak of World War I drew Addams actively into the peace movement. In January 1915 she was elected chairwoman of the newly formed Woman's Peace party. Several months later, she attended the International Congress of Women at The Hague with EMILY GREENE BALCH and others. Addams was elected president of the congress. Among the group's efforts was the unsuccessful attempt to persuade neutral nations to mediate a truce between the belligerents in the war.

When the United States entered the war in 1917, Addams did not modify her pacifist stance. She opposed the draft and defended German immigrants who were persecuted for their nationality during the war hysteria. Few colleagues shared her position. The press vilified her; Roosevelt called her a Bull Mouse; and the Department of Justice kept her under surveillance. Undaunted, she worked with Herbert Hoover's Food Administration to feed "enemy women and children." In 1920 she became a founding member of the American Civil Liberties Union. Called subversive and a traitor, she was expelled from the Daughters of the American Revolution for alleged Communist views.

Addams's dedication to peace did not end with the European armistice. In 1919 she was elected president of the Women's International League for Peace and Freedom, an outgrowth of the congress held in The Hague five years earlier. The league stood for "the solution of conflicts by the recognition of human solidarity, by conciliation and arbitration, by world cooperation, and by the establishment of social, political, and economic justice for all, without distinction of sex, race, class, or creed."

Addams believed that Mohandas Gandhi's practice of passive resistance could not by itself ensure peace: peace could be preserved only if organizations put pressure on governments. Under her direction, the Women's International League sought to eliminate the causes of war by supporting revision of peace treaties, elimination of conscription, worldwide disarmament, and an end to war reparations. With Emily Greene Balch, the league's secretary-treasurer, Addams attempted to influence the development of the League of Nations, urging that it be made more democratic through recognition of minority rights. Ill health forced her to resign from the league in 1929.

In 1931, after repeated nominations, Addams became the first American woman to be awarded the Nobel Prize for Peace, as "the right spokesman for all the peace-loving women of the world." She shared the prize with NICH-OLAS MURRAY BUTLER. Because of continued ill health, Addams could not attend the award ceremonies.

Privately, Addams lived in a world of women. Unable to have children because of spinal surgery, she resisted a match with a stepbrother and never married. Her acquaintances found Addams warm and sympathetic but also impersonal and aloof, yet she enjoyed deep and abiding friendships with Ellen Gates Starr and Mary Rozet Smith. Near the end of her life, Addams made her home with Smith rather than at Hull House. She died of cancer on May 21, 1935, and is buried in a small cemetery in Cedarville.

Addams's humanitarian efforts were wideranging and enduring. Her work at Hull House not only alleviated immigrant alienation and poverty but also furnished an example for settlement workers elsewhere. Through her efforts to improve urban social conditions, she created the profession of social worker. In her efforts to eradicate war, she remained a pacifist despite strong pressure to join the supporters of World War I. In a climate of war hysteria and red-baiting, she stood resolutely for the protection of individual civil liberties. At the international level, she sought to influence government leaders on behalf of mediation and disarmament.

For Jane Addams, peace was not simply the absence of war but the "nurturing of human life." Women, with their special sensibilities, she believed, were ideally suited to this nurturing. Addams cared deeply about women's "long historical role of ministration to basic human needs," and by acting in this role, she made enduring contributions to America's reform tradition.

SELECTED WORKS: Democracy and Social Ethics, 1902; Newer Ideals of Peace, 1907; The Spirit of Youth and the City Streets, 1909; Twenty Years at Hull-House, 1910; A New Conscience and an Ancient Evil, 1912; Women at The Hague, 1915, with Emily Greene Balch and Alice Hamilton; The Long Road of Woman's Memory, 1916; Peace and Bread in Time of War, 1922; The Second Twenty Years at Hull-House, 1930; The Excellent Becomes the Permanent, 1932; A Centennial Reader, 1960. **Context Context Conte** 

#### ADRIAN, EDGAR D.

November 30, 1889–August 4, 1977) Nobel Prize for Physiology or Medicine, 1932

(shared with Charles S. Sherrington)

Edgar Douglas Adrian, an English physiolpist, was born in London, the second of three ors of Alfred Douglas Adrian, a legal adviser the local government board, and the former Fora Lavinia Barton. After receiving his secodary schooling at a prestigious public school Westminster, Adrian entered Trinity Colge, Cambridge, in 1908 to study the natural conces. There his studies were directed by the physiologist Keith Lucas, who was invesgating the reactions of nerves and muscles to electrical stimulation; soon, Adrian became toolved in the research.

It had been established in 1871 that heart muscle responds to an electrical impulse by an all-or-none" reaction; that is, either the musde responds with full force or it does not respond. In 1905 Lucas had shown that not only the heart but all muscles exhibit smooth muscular activity, as such responses are known. Smooth muscle activity is produced by altering the number of active fibers and the frequency with which they contract. Although Lucas's subsequent experiments strongly suggested that herves also exhibit such all-or-none responses, there was no direct proof, since there was as yet no way to detect the activity in a single herve cell.

In their research Adrian and Lucas exammed whether the energy for the nerve impulse (the action potential) is derived from the energy of the stimulus, as in the flight of a bullet, or is a self-propagating reaction, like the movement of a spark along a fuse. Their evidence suggested the latter, although it was not until the 1940s that ALAN HODGKIN and AN-DREW HUXLEY explained the mechanism by which the action potential operates.



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Two years after graduating from Cambridge in 1911, Adrian was elected a fellow of Trinity College. Then, having decided that a medical degree would enhance his research career, he began working at St. Bartholomew's Hospital in London just before the outbreak of World War I. Upon completing clinical training in the record-breaking time of little more than a year, he spent the rest of the war in England, studying and treating shell shock and neurological injuries while trying strenuously to get posted to France.

Before Lucas's death in an airplane crash in 1916, he and Adrian had discussed possible ways of recording the electrical impulses in single nerve fibers. The impulses were known to be only a few thousandths of a second in duration and to have the strength of only a few microvolts—too brief and too weak to be measured by available instruments. Lucas had suggested the use of thermionic valves, such as those invented by GUGLIELMO MARCONI and FERDINAND BRAUN, to amplify the electrical signal from the nerve before they tried to detect the impulses.

This idea lay dormant for several years, however, since the influx of students after the war greatly increased Adrian's teaching responsibilities. Although his research was hindered, he made important observations on the refractory period (the span of time directly after an electrical impulse, when the tissue cannot be excited) of nerves and muscles, and in 1922, working with the American neurobiologist Alexander Forbes, he obtained convincing evidence that sensory nerves, as well

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as those controlling actions, obey the all-ornone law. This observation was unexpected; at the time, many scientists believed that the information conveyed by the sensory nerves was too complex to be the result of such simple impulses.

In 1925 Adrian began employing electrical methods, particularly valve amplifiers, in his experiments. HERBERT S. GASSER and his colleagues at the Johns Hopkins School of Medicine had constructed an amplifier for recording action potentials in bundles of motor nerve fibers. Adrian built his own amplifier to Gasser's specifications and tested it on nerves taken from frog muscle. Earlier, CHARLES S. SHER-RINGTON had postulated that the muscle contains sensory nerves that signal how much it is stretching; Adrian found that he could reduce the muscle until it contained only one sense organ, which became stimulated when the muscle was stretched. Each impulse in the sensory nerve has exactly the same strength and duration; however, as Adrian later said, "the frequency [of the impulses] depends on the extent and the rapidity of the stretch; it depends, that is to say, on the intensity of excitation in the sense organ, and in this way the impulse message can signal far more than the mere fact that excitation has occurred."

For the next several years Adrian and his colleagues investigated impulses in various sensory and motor nerves, and their experiments produced the information necessary to formulate a general theory of sensation. According to Adrian, human sensory receptors react only to changes in the environment; after the change has occurred, the receptors adapt to the new state of affairs. The intensity with which the receptors react determines the rate at which impulses in the sensory nerves are produced.

Later, Adrian described the path between this excitation and the mind: "The excitatory process in the receptor declines gradually, and as it declines, the intervals between the impulses in the sensory fiber become longer and longer. The impulses are integrated by some central process, and the rise and decline of the sensation is a fairly close copy of the rise and decline of the excitatory process in the receptor. The quality of the sensation seems to depend on the path which the impulses must travel." In other words, all sensory impulses are alike. Therefore, light is sensed as light, and sound as sound, not because of a fundamental difference between sensations perceived by the ear and the eye, but because the brain interprets any stimulation of the optic nerve as light and any stimulation of the auditory nerve as sound.

The studies conducted by Adrian on motor nerves revealed that "the messages which pass down the motor fibers to the muscles have . . . the same limitations as the sensory messages, and again we find that the effect is graded by changes in the frequency of the impulse discharge and in the number of units in action." His discoveries concerning adaptation and the coding of nerve impulses enabled researchers to study sensations objectively and directly.

Adrian shared the 1932 Nobel Prize for Physiology or Medicine with Sherrington "for their discoveries concerning the functions of neurons." "Adrian's investigations have given us a highly important insight into the question of the nerve principle and the adaptability of. the sense organs," said Göran Liljestrand of the Karolinska Institute in his presentation speech.

At this time Adrian's interest shifted from the peripheral sense organs to the brain. Through his research on brain waves in the early 1930s, he contributed to the development of the electroencephalograph for measuring brain activity.

The next twenty years of Adrian's work as an experimental scientist involved a variety of subjects, including hearing, the sensory cortex (those areas of the brain involved in processing complex sensory data), the cerebellum, the vestibular apparatus, and the sense of smell all perhaps part of an effort to survey the entire central nervous system. Renowned for his skills as an experimenter, he often used himself as a subject and once injected a long needle into his arm, keeping it there for two hours while he recorded the workings of the muscle.

In 1951 Adrian relinquished his duties as professor of physiology at Cambridge to become master of Trinity College, after which much of his time was taken up with administration, lecturing, and politics. From 1950 to 1955 he served as president of the Royal Society of London, to which he had been elected in 1923. During his tenure as president of the society, he was also president of the British Association for the Advancement of Science for one year and was only the third person in history to head both organizations concurrently.

He was vice-chancellor of Cambridge from 1957 to 1959 and chancellor from 1968 through December of 1975. Alan Hodgkin recalls that "when he became chancellor, some Trinity rowing men called on Adrian and asked if they

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might have the honor of rowing him upriver from Trinity to the University Centre. In spite of his seventy-eight years Adrian accepted and, dressed in formal clothes, he coxed the boat successfully through a succession of upriver bridges."

The culminating honor in a life rich with honors occurred in 1955 when Queen Elizabeth II made him a baron. As Baron Adrian of Cambridge, one of the last hereditary peers created in England, he attended the House of Lords as regularly as possible and spoke on a variety of subjects ranging from foot-and-mouth disease to nuclear disarmament.

In 1923 Adrian married Hester Pinsent, a descendant of the Scottish philosopher David Hume; they had a son and two daughters. Hester Adrian was noted for her work in the fields of mental health and juvenile delinquency. A high-spirited person who enjoyed driving fast cars and climbing mountains when he was young, Lord Adrian lived in his rooms in Nevile's Court in Trinity College until shortly before his death in 1977.

Adrian was a member of more than forty scientific and professional organizations. His many awards included the Royal Medal (1934) and Copley Medal (1946) of the Royal Society, the Albert Gold Medal of the Royal Society of Arts (1953), the Medal for Distinguished Merit of the British Medical Association (1958), and the Jephcott Medal and Lecture of the Royal Society of Medicine (1963).

SELECTED WORKS: The Action of Light on the Eye, 1927, with Rachel Mathews; The Basis of Sensation, 1928; The Mechanism of Nerve Action, 1932; The Physical Background of Perception, 1947; Sensory Integration, 1949; The Responsibilities of the Brain, 1951.

ABOUT: Biographical Memoirs of Fellows of the Royal Society, volume 25, 1979; New York Times August 6, 1977; Oxbury, H. (ed.) Great Britons, 1985.

#### AGNON, S. Y.

(July 17, 1888–February 17, 1970) Nobel Prize for Literature, 1966 (shared with Nelly Sachs)

The Israeli novelist and short story writer S. Y. Agnon (ug non') was born Shmuel Yosef Halevi Czaczkes in the small town of Buczacz, in Galicia, a region of the Austro-Hungarian Empire, now part of Poland. His father, Shalom Mordecai Halevi Czaczkes, had received rabbinical training but was a fur trader by profession. His mother, the former Esther Farb, was



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a well-read woman, and his maternal grandfather, Yehuda Farb, was a merchant whose prodigious knowledge strongly influenced the young Agnon.

Agnon's boyhood education and upbringing provided the basic themes and subject matter for much of his subsequent writing. In addition to attending the traditional heder (elementary school), Agnon studied the Talmud under the tutelage of his father and the local rabbi. In the local beth hamidrash (house of learning), he read the works of ancient and medieval Jewish sages and the lore of the Hasidim (followers of a mystical Jewish sect that arose in eighteenth-century Poland), as well as contemporary Hebrew literature. When Agnon was a teenager, he became an active Zionist. His first poetry, published in a local newspaper when he was fifteen, was written in Hebrew and Yiddish. When he was eighteen, he went to Lvov to work on a Hebrew newspaper. In 1907, he journeyed to Jaffa, in Palestine (then part of the Turkish Ottoman Empire), and a year later he moved to Jerusalem. At the time, he was a secretary of the Jewish court and served on several Jewish councils. In 1909 he published the short novel Agunot (Forsaken Wives). From this title he derived his pen name, Agnon (which means "cut off" in Hebrew). He adopted Agnon as his legal last name in 1924. Like all Agnon's subsequent work, Agunot was written in Hebrew. The characteristics of his writing-its use of folklore and fantasy and its religious overtones-were already present in this early work. Agnon's writing, thoroughly rooted in traditional Jewish

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lubricating oils, insecticides, synthetic rubber, and plastics.

During the next eight years, Alder and Diels further clarified the nature of diene synthesis. In 1930 Alder was appointed a reader in organic chemistry at Kiel, and in 1934 he became extraordinary professor of organic chemistry. His growing expertise in diene synthesis led to an invitation to become director of scientific research at the Interessen-Gemeinschaft Farbenindustrie Aktiengesellschaft (I. G. Farben) plant in Leverkusen, which Alder accepted in 1936. At Leverkusen, Alder investigated the effects of joining butadiene (a form of diene) to various philodienes, notably styrene, to form synthetic rubber. He also studied the molecular structure of the syntheses he produced.

Returning to academic life in 1940, Alder, who was not involved in Germany's wartime research, was appointed to the chair for experimental chemistry and chemical technology at the University of Cologne. Concurrently he served as director of the university's Chemistry Institute. In this capacity he applied diene synthesis to unravel the chemical constitutions of complex natural products such as the terpenes (isomeric hydrocarbons found in the oil of conifers), the vitamin D precursor ergosterol, and the D vitamins. An exceptionally able stereochemist, Alder was also interested in learning why, when several possible structures for the resulting molecule seemed equally likely, a particular reaction took place.

In 1949, the same year that he was named dean of the Faculty of Philosophy at Cologne, Alder shared the Nobel Prize for Chemistry with Diels "for their discovery and development of the synthesis of dienes." In his Nobel lecture Alder reviewed the research leading to this discovery and described the structural determinants governing the selection of a particular configuration over others. He noted that this pronounced steric selective property of the diene synthesis is "one of the decisive factors determining the value of the diene synthesis as a method. The fact that it can be used as a means of isolating and separating substances from mixtures, and that it is uniquely suitable as a means of determining the character of specific types of substances," he continued, "could otherwise never have been known."

After receiving the Nobel Prize, Alder continued to teach and to conduct research into further potential commercial applications of the diene synthesis. In 1955 he joined seventeen other Nobel laureates in signing a declaration calling upon all nations to renounce war as an instrument of foreign policy. An

intensely dedicated worker, Alder, who remained unmarried, succumbed to exhaustion in 1957 and was advised by his doctor to take a complete rest. He died the following year at the age of fifty-five.

In addition to the Nobel Prize, Alder also received the Emil Fischer Medal from the German Chemical Society (1938) and honorary degrees from the Medical Faculty of the University of Cologne (1950) and the University of Salamanca (1954). He held membership in the Leopoldina German Academy of Researchers in Natural Sciences.

ABOUT: Dictionary of Scientific Biography, volume 1, 1970; New York Times November 25, 1950.

# ALEIXANDRE, VICENTE

(April 26, 1898–December 14, 1984) Nobel Prize for Literature, 1977

The Spanish poet Vicente Aleixandre (ä lāx än' drā) y Merlo was born in Seville to Cirilo Aleixandre Ballester, a civil engineer with the Andalusian Railways, and Elvira Merlo García de Pruneda, daughter of the district military superintendent. Aleixandre was the elder surviving child in his family; an older sister had died in infancy, and a younger sister, Conchita, was born in 1899. When the boy was still an infant, his father was transferred to Málaga, where Aleixandre grew up surrounded by the sunny beauty of the Mediterranean coast, images of which appear throughout his poetry. While attending the local elementary school, he became familiar with the tales of Hans Christian Andersen and the brothers Grimm.

After the family moved to Madrid in 1909, Aleixandre attended the Colegio Teresiano, a secular school, from which he received his *bachillerato* degree (the equivalent of a high school diploma for academic students) in 1913. During these years his maternal grandfather encouraged him to use the library, and there Aleixandre encountered the works of Arthur Conan Doyle and Fedor Dostoevsky, as well as Homer's *Iliad* and the plays of Friedrich Schiller.

Entering the University of Madrid in 1914, Aleixandre studied law and took occasional classes in Spanish literature. While vacationing in the province of Ávila during the summer of 1917, he met Dámaso Alonso, a student his own age (later the president of the Royal Spanish Academy), who introduced him to the Sork of the Nicaraguan modernist poet Rubén Curio and awakened his interest in poetry.

Upon graduation in 1920 with degrees in law in business management, Aleixandre become an assistant professor at the School of tercantile Management in Madrid. Two years the took a job with the Andalusian Railters and began writing articles on railway ecoters for a business weekly. Although he was writing poetry during this time, he kept the better ary work secret for several years.

In 1922 he suffered an attack of infectious infinitis, the first in a series of illnesses that infinitis, the first in a series of illnesses that infinitis, the first in a series of illnesses that infinitis, the first in a series of illnesses that infinitis, the first in a series of illnesses that infinitis, the first in a series of illnesses that infinitis, the first in a series of illnesses that infinitis a series of illnesses that infinitis and retired to a house his father had taken infinitis and retired to a house his father had taken infinitis and retired to a house his father had taken infinitis and retired to a house his father had taken infinitis and retired to a house his father had taken infinitis and the one of the father had taken infinitis and the overpowering fear of death infinitis had instilled in him. Filled with infinitional ballad form.

Discovering that Aleixandre had been writme several friends persuaded him to submit is work to the review Revista de Occidente Cournal of the West), which, in 1926, became the first journal to publish his poems. In May 1927 he and his family moved into a small villa on the northern outskirts of Madrid, where he spent the rest of his life. That year marked the tercentenary of the death of the great Spanish poet Luis de Góngora. A group of young writers who paid homage on the occasion became known as the Generation of 1927. Its members, which included Aleixandre, Jorge Gui-Dámaso Alonso, Rafael Alberti, Luis Cemuda, and Federico García Lorca, among others, embraced surrealism in a form that was termed superrealismo.

Around the time that *Ambito* appeared, Altrandre began reading the works of Sigmund Freud, which he used to interpret the morbid andreams he experienced during his illness. The strains of surrealism and Freudianism can be seen in *Pasión de la tierra* (Passion of the Earth), in which the ballad form gives way to adenced prose poems that consist of seemgly disordered images. Composed between 528 and 1929, *Pasión de la tierra* was not published until 1935. Meanwhile, Aleixandre trote *Espadas como labios* (Swords Like Lips, 532) and the intensely erotic volume *La destación o el amor* (Destruction or Love, 1933). For the latter work, which is widely considered



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his masterpiece, he received the National Prize for Literature in 1933.

With the outbreak of the Spanish Civil War in 1936, hard times befell the Generation of 1927. Most of its members fled Spain; García Lorca was executed by the troops of Francisco Franco. Because of his illness, Aleixandre remained in Spain, though his house, located at the Madrid front, was destroyed near the end of the war. After their father's death in 1940, Aleixandre and his sister rebuilt the house. Aleixandre continued to write even though his poems were banned for a time. "My task was not too easy in the early postwar years," he later recalled.

Mundo a solas (World Alone), written on the eve of the Civil War but not published until 1950, served as a prelude to Sombra del paraiso (Shadow of Paradise, 1944), an evocation of a utopia of beauty and happiness perceived from the distant perspective of a poet troubled by intimations of death. Historia del corazón (The Story of the Heart, 1954) marked a shift from the sadness of his earlier work to a kind of humanistic and spiritual affirmation. According to Aleixandre's translator Lewis Hyde, "[Aleixandre] is one of the few pessimistic poets of the century who managed to emerge and find something above the darkness." Aleixandre's later volumes of poetry include En un vasto dominio (In a Vast Dominion, 1962), Poemas de la consumación (Poems of Consummation, 1968), and Diálogos del conocimiento (Dialogues of Knowledge, 1974). In 1958 he published Los Encuentros (Encoun-